

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): A method ~~[[for]]~~ of assisting low-altitude navigation of an aircraft equipped with a flight management system suited to determining a flight-plan ground trajectory for the aircraft based on a sequence of straight and/or curved segments joining intermediate points on the ground P at an altitude $\text{alt}(P)$, where the ground trajectory takes into consideration the aircraft's performance and limitations, ~~wherein it comprises~~ comprising the following steps: ~~for the flight management system consisting in:~~

[[-]] for each point P on the ground trajectory, calculating a safe altitude, alt_{safe} , to obtain a point P_{safe} such that $\text{alt}_{\text{safe}}(P_{\text{safe}}) = \text{Max}[\text{alt}(P + \text{lat mrg R}), \text{alt}(P + \text{lat mrg L})] + \text{vert mrg}$, where lat mrg R and lat mrg L are respectively predetermined right and left lateral margins and vert mrg is a predetermined vertical margin,

[[-]] calculating a safe profile formed from safe segments joining the points P_{safe} ,

[[-]] extracting summit points S from among the points P_{safe} of the safe profile such that the K points located before S and after S have a safe altitude below that of S, K being a determined parameter,

[[-]] determining the aircraft's weight at these points S as a function of the distance along the safe profile between the aircraft and this point S and of the aircraft's consumption over this distance, where the consumption is an aspect of the aircraft's performance and limitations,

[[-]] for each point S, determining the maximum climb slope (MaxClimbFPA) that the aircraft can support to reach S and the maximum descent slope (MaxDescFPA) which the aircraft can support for following the lowest ground trajectory after having passed through S as a function of the aircraft's performance and limitations and the weight, defining two performance segments which have a first end at S, slopes MaxClimbFPA and MaxDescFPA on either side of the point S and a second end at the point of intersection with the terrain or with another performance segment arising from another point S and -

calculating a performance profile formed from performance segments and which makes it possible to associate at each point P of the safe profile a performance altitude, alt perf (P).

2. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in the preceding claim 1, ~~wherein it further comprises~~ comprising ~~the step consisting of~~ determining a flyable low-altitude profile based on the safe profile and the performance profile.

3. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in the preceding claim 1, wherein the determination of the flyable low-altitude profile ~~consists of~~ includes calculating for each point P of the ground trajectory a low-altitude flight altitude, alt flight, for obtaining a point P_{flight} such that

$$\text{alt flight}(P_{\text{flight}}) = \text{Max}[\text{alt safe}(P), \text{alt perf}(P)],$$

where the flyable low-altitude profile is formed from segments joining the points P_{flight}.

4. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 1, ~~wherein that it consists of~~ comprising sampling the points P according to a step p, and in that K is determined as a function of p and/or a threshold slope and~~[[/or]]~~ the terrain and/or aircraft performance and limitations.

5. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 1, wherein since the flight management system has an estimated position uncertainty, lat mrg R and L are determined as a function of the aircraft's performance and limitations, and of the estimated position uncertainty.

6. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 1, wherein since the flight management system has the wind speed and direction, aircraft speed, altitude of the terrain, and local temperature, the slopes MaxClimbFPA and MaxDescFPA are weighted as a function of the wind speed and direction and~~[[/or]]~~ aircraft speed and~~[[/or]]~~ altitude of the terrain and/or local temperature.

7. (currently amended): The method of assisting navigation as claimed in claim 2, wherein since the flight management system has the wind speed and direction, aircraft speed, altitude of the terrain, and local temperature, the slopes MaxClimbFPA and MaxDescFPA are weighted as a function of the wind speed and direction and/or aircraft speed and/or altitude of the terrain and~~[[/or]]~~ local temperature.

8. (currently amended): The method of assisting navigation as claimed in claim 3, wherein since the flight management system has the wind speed and direction, aircraft speed, altitude of the terrain, and local temperature, the slopes MaxClimbFPA and MaxDescFPA are weighted as a function of the wind speed and direction and/or aircraft speed and/or altitude of the terrain and~~[[/or]]~~ local temperature.

9. (currently amended): The method of assisting navigation, as claimed in claim 4, wherein since the flight management system has the wind speed and direction, aircraft speed, altitude of the terrain, and local temperature, the slopes MaxClimbFPA and MaxDescFPA are weighted as a function of the wind speed and direction and/or aircraft speed and/or altitude of the terrain and~~[[/or]]~~ local temperature.

10. (currently amended): The method for assisting navigation as claimed in claim 5, wherein since the flight management system has the wind speed and direction, aircraft speed, altitude of the terrain, and local temperature, the slopes MaxClimbFPA and MaxDescFPA are weighted as a function of the wind speed and direction and/or aircraft speed and/or altitude of the terrain and~~[[/or]]~~ local temperature.

11. (currently amended): The method of assisting navigation as claimed in claim 1, wherein since the aircraft is equipped with the engines, the slope MaxClimbFPA is calculated assuming an engine failure.

12. (currently amended): The method of assisting navigation as claimed in claim 2, wherein since the aircraft is equipped with the engines, the slope MaxClimbFPA is calculated assuming an engine failure.

13. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 3, wherein since the aircraft is equipped with the engines, the slope MaxClimbFPA is calculated assuming an engine failure.

14. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 4, wherein since the aircraft is equipped with the engines, the slope MaxClimbFPA is calculated assuming an engine failure.

15. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 1, wherein the flight management system being connected to a terrain database composed of grids having a predetermined width L, and comprising information on the terrain's slope, it involves sampling the points P according to a step p determined as a function of the terrain's slope and the width L of the grids.

16. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 2, wherein the flight management system being connected to a terrain database composed of grids having a predetermined width L, and comprising information on the terrain's slope, it involves sampling the points P according to a step p determined as a function of the terrain's slope and the width L of the grids.

17. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 3, wherein the flight management system being connected to a terrain database composed of grids having a predetermined width L, and comprising information on the terrain's slope, it involves sampling the points P according to a step p determined as a function of the terrain's slope and the width L of the grids.

18. (currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 4, wherein the flight management system being connected to a terrain database composed of grids having a predetermined width L, and comprising information on the terrain's slope, it involves sampling the points P according to a step p determined as a function of the terrain's slope and the width L of the grids.

19.(currently amended): The method ~~[[for]]~~ of assisting navigation as claimed in claim 2 ~~to 18~~, wherein since a transition parabola is associated with the segments SegClimb and

SegDesc of the flyable profile arising from a summit S, and since the top of the parabola is situated at ΔH from S, it consists in:

- calculating a new summit S' located at ΔH above the summit S;
- raising the transition parabola by ΔH ; and
- defining segments SegClimb' and SegDesc' arising from S' in a manner such that they are tangent to the raised transition parabola and obtain a new flyable profile.

20. (currently amended): A flight management system for an aircraft comprising a central unit which communicates with an input-output interface, a program memory, a working memory, and a data storage memory, by means of data-transfer circuits, the input-output interface being connected to a database of the terrain to be flown over, wherein the program memory includes a program for implementing the method as claimed in ~~one of the preceding claim~~[[s]] 1.